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PLATE XII

1. The Acharian type of *Parmelia usneoides* at Helsingfors (1-3 nat. size).
2. The Linnean type of *Lichen usnea* at London (2-3 nat. size).
3. The Nylander type of *Ramalina usneoides* var. *usneoidella* at Paris (½ nat. size).

PLATE XIII

1. The Nylander type of *Ramalina alludens* at Helsingfors (nat. size).
2. The Nylander type of *Ramalina anceps* at Paris (½ nat. size).
3. The Nylander type of *Ramalina bistorta* at Helsingfors (nat. size).

NOTES ON NORTH AMERICAN HEPATICAE. V

ALEXANDER W. EVANS

Seven of the species noted in the present paper represent additions to the hepatic flora of the United States, while the other three are introduced to record extensions of range. Of the seven additions, six were found in Florida and one in California. Four of the Florida species belong to the Lejeuneae, so that thirty-three representatives of this group are now definitely known from the state.

1. METZGERIA UNCIGERA Evans, Ann. Bot. **24**: 276. *f. 1–3.* 1910.

Collected in December, 1913, at Robinson Spring, eight miles south of Sanford, Florida, on a tree trunk six feet above the ground, by S. Rapp (*No. 73*). New to the United States and the second recorded station for the species, the type locality being Mount Morales, near Utuado, Porto Rico, where the plant was found by M. A. Howe, in March, 1906 (*No. 1128*). The Florida specimens are apparently quite destitute of sexual organs, but show a vigorous development of the characteristic marginal gemmae with their hooked hairs. For a full description of these interesting reproductive organs, reference may be made to the paper quoted above. In the original description of *M. uncigera*, the wings of the thallus are said to lack surface-hairs altogether, and this feature is emphasized in pointing out the differential characters between the species and *M. furcata* (L.) Dumort. The Florida specimens show occasional hairs on the postical surface of the thallus-wings. This might at first throw doubt on the determination, but a re-examination of the type-material brings out the fact that surface-hairs are occasionally present even there, although much rarer than in the Florida material. The original description, therefore, should be slightly amended in this respect, so as to read, hairs few and irregularly scattered, borne on the margin, on the postical surface of the costa, and, more rarely, on the postical surface of the wings.

2. FOSSOMBRONIA SALINA Lindb. Acta Soc. Sci. Fenn. **10:** 533. 1875. Evans, Rhodora **3:** 7–10, with text-figure. 1901.

Collected in May, 1913, at Glenolden, Pennsylvania, on clay soil in an old rye field, by A. F. K. Krout. In specimens collected on May 11 the spores were in excellent condition; in specimens collected on May 19, most of the spores had been disseminated. In the note referred to above, the writer recorded *F. salina* from Connecticut, New Jersey, and Florida. In addition to the station reported above, the species may now be cited from the following localities: Orange and Hamden, Connecticut (*J. A. Allen*)[1]; Chapel Hill, North Carolina (*Coker*)[2]; Sanford, Florida (*Rapp*); Oakland, Tennessee (*Bain 2*); Pine Bluff, Arkansas (*Bain 1*); Pinar del Rio, Cuba, *C. Wright*); Province of Santiago, Cuba (*Pollard & Palmer 8*); near Cayey, Porto Rico (*A. W. E.*).

Lindberg's original publication of *F. salina* can hardly be regarded as adequate. He comments on the fact that the plant is paroicous and therefore distinct from *F. angulosa* Raddi, with which Austin had confused it. He states further that it probably represents a new species and gives the name *F. salina* Lindb. in parentheses. But he does not publish the plant formally under this name, and the Vienna Rules would probably interpret his statements as "incidental mention" and not as publication. Both Underwood and Stephani list *F. salina* among their doubtful species, without describing it, so that the writer's description in Rhodora must be considered the first valid publication of the species. In Stephani's revision of the genus *Fossombronia* in the first volume of his Species Hepaticarum[3], he published as a new species *F. brasiliensis* Steph., quoting specimens from Brazil (*Puiggari, Ule*), Cuba (*Wright*), and Dominica (*Elliott*). This species, which the writer knows from description only, is evidently very close to *F. salina*, although the size of the plant is less. It is said to be distinguished also by its dioicous inflorescence, but there is, of course, a possibility that the species is really monoicous and that the antheridia are difficult to demonstrate at the time of the maturity of the capsules. If *F. brasiliensis* and *F. salina* should ever be proved synonymous, the name *F. brasiliensis* should stand for the species, because the adequate publication of this name was earlier than that of *F. salina*. Until this is done, however, the retention of the name *F. salina* for the species seems justifiable.

3. NARDIA GEOSCYPHUS (DeNot.) Lindb.

In the third paper of this series[4] the present species was recorded from Nova Scotia, an extension of its range in a northeasterly direction. A few months ago it was reported from Bolton, Connecticut, the material having been collected by Miss Annie Lorenz.[5] It is now possible to extend its range still farther to the southward, into New Jersey, on the basis of specimens collected by Miss C. C. Haynes and the writer in the township of Middletown, Monmouth County, in September, 1913.

Some time ago Stephani[6] doubtfully included among the synonyms of *N. Geoscyphus* a species from Tallulah Falls, Georgia, originally named *Alicularia Lescurii* by Austin[7] and afterwards called *Nardia Lescurii* by Underwood[8]. This species was first found by Leo Lesquereux in 1850 and was rediscovered by A. B. Seymour in 1901. Lesquereux's specimens were distributed by Austin in his Hepaticae Boreali-Americanae (*No. 5*). If Stephani's supposition could be proved correct the range of *N. Geoscyphus* to the southward would, of course, be much farther extended. Unfortunately, *N. Lescurii* is still very incompletely known. In the specimens examined by the writer, which include both Austin's exsiccatae and a part of Seymour's collection, the plants resemble *N. Geoscyphus* very closely, although the underleaves are somewhat better developed. They show, however, antheridia and archegonia on distinct individuals and not on the same shoot. The inflorescence, therefore, is dioicous and not paroicous, as it ought to be in *N. Geoscyphus*. The attempt was made repeatedly to demonstrate young archegonia at the tip of an antheridial shoot, but absolutely in vain. At the same time the leaves below the terminal clusters of archegonia were found to show no signs of the basal sacs characteristic of perigonial bracts. The absence of perianths and of capsules in all the material studied makes it impossible to establish the generic position of the plant beyond all doubt, but it seems advisable to consider it a valid species until more is known about it. The locality in New Jersey therefore must be regarded as the southernmost known station for *Nardia Geoscyphus* along the Atlantic seaboard.

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[1] See Evans & Nichols, Conn. Geol. and Nat. Hist. Surv. Bull. 11: 46. 1908.

[2] Jour. Elisha Mitchell Sc. Soc. **20**: 4. 1904.

[3] Mém. Herb. Boissier 16: 28. 1900.

[4] BRYOLOGIST **15**: 55. 1912.

[5] Rhodora **16**: 76. 1914.

[6] Bull. Herb. Boissier II. **1**: 481. 1901.

[7] Bull. Torrey Club **6**: 18. 1875.

[8] Bull. Illinois State Lab. Nat. Hist. **2**: 115. 1884.

4. CEPHALOZIA AFFINIS Lindb. Meddel. Soc. F. et Fl. Fenn. **17:** 158. 1883 (*nomen nudum*). Stephani, Bull. Herb. Boissier II. **8:** 277. 1908. K. Müller, Rabenhorst's Kryptogamen-Flora **6^2:** 54. *f. 16.* 1912.

Collected at Sisson, California, on a wet bank, growing on soil, humus, and rotten wood, by G. M. Pendleton. In his announcement of *C. affinis* as a new species Lindberg quoted specimens from two stations in Finland, from one station in Sweden, and from Austin's Hepaticae Boreali-Americanae, No. 57, in part. He published no description of the plant, and apparently it attracted no attention until formally described by Stephani twenty-five years later. K. Müller, in the place quoted above, again records the various stations originally given by Lindberg, but makes no additions. At the same time he intimates that the species ought probably to be found in central Europe. He points out its extremely close relationship to *C. media* Lindb., so close that sterile plants are practically indistinguishable. The only important differences, in fact, are that *C. affinis* is autoicous, while *C. media* is dioicous, and that the dentation at the mouth of the perianth is a little deeper in *C. affinis* than in the other species. The specimens from California are clearly autoicous, a fact which was first demonstrated by Miss Haynes. The writer, however, has failed to find any autoicous material in the number of Austin's exsiccatae which Lindberg quotes. The number is composed of a mixture of various distinct plants, without any indication of the stations where they were collected, and it is probable that there are different mixtures in different sets. For the present, therefore, the Californian specimens may be regarded as the only ones from a definite North American station, which can be safely cited.

5. LEJEUNEA SPINILOBA Lindenb. & Gottsche: G. L. & N. Syn. Hep. 770. 1847. *Potamolejeunea spiniloba* Steph. Sp. Hepat. **5:** 639. 1914.

Collected in December, 1913, at Sanford, Florida, on trunk of cypress, by S. Rapp (*No. 71*). New to the United States. This species, originally described from Mexican material, was recently recorded from Cuba by the writer,[1] so that the extension of its range into subtropical Florida was not wholly unexpected. Mr. Rapp's specimens are in excellent condition and show both perianths and antheridial branches. The inflorescence is clearly autoicous.

6. TAXILEJEUNEA OBTUSANGULA (Spruce) Evans, Bull. Torrey Club **38:** 215. *pl. 10.* 1911. *Lejeunea* (*Taxi-Lejeunea*) *obtusangula* Spruce, Hep. Amaz. et And. 221. 1884.

Collected in December, 1913, at Robinson Spring, eight miles south of Sanford, Florida, in a hammock, at base of tree, by S. Rapp (*No. 70*) mixed with a poorly developed *Plagiochila*, probably referable to *P. floridana* Evans. The range of this species is very incompletely known. It was originally described from specimens collected by Spruce in the vicinity of Pará, Brazil, and has lately been recorded by the writer from two localities in New Providence, one of the Bahama Islands. No other stations have as yet been definitely reported. The genus *Taxilejeunea* has not before been recorded from the United States.

7. CROSSOTOLEJEUNEA BERMUDIANA Evans, Bull. Torrey Club **33:** 132. *pl. 6.* 1906.

Collected at the following two stations in Florida: on decayed palmetto, New Hawkinsville, in May, 1912, by S. C. Hood (*Nos. 37 & 43*); on bark, in Upsala Swamp, Sanford, in May, 1913, by S. Rapp (No. 65). Both genus and species new to the United States. Hitherto known from Bermuda only and supposed to be endemic to the island. The original material, collected at Flatts, by W. R. Coe, grew on the ground and on rocks; the specimens collected by E. G. Britton at Paynter's Vale apparently grew on an organic substratum, but unfortunately the label throws no light on the matter. The species has since been discovered, however, on a dead stump at the mouth of a cave, Harrington House, by S. Brown (*No. 555*), in February, 1908, so that the occurrence of the Florida specimens on bark is not surprising. Both sets of specimens, which were determined provisionally by Miss Haynes and Mr. Rapp respectively, agree closely with the material from Bermuda. The underleaves, however, show a somewhat more marked tendency to be unidentate on the sides, and there is a greater prevalence of teeth two cells long on the wings of the perianths.

8. LEUCOLEJEUNEA XANTHOCARPA (Lehm. & Lindenb.) Evans, Torreya **7:** 229. 1908; Bull. Torrey Club **35:** 172. *pl. 7, f. 12–23.* 1908.

Collected on tree trunks in a hammock, at De Leon Spring, Florida, by S. Rapp, in May, 1913 (*No. 66*). A widely distributed species in tropical America and also reported from several localities in Africa. *L. xanthocarpa* was first recorded from the United States by Austin, but, as the writer[2] has already pointed out, this record was based on an incorrect determination, the plants in question belonging to *L. unciloba* (Lindenb.) Evans, *Archilejeunea Sellowiana* Steph. being a synonym. Mr. Rapp's specimens, therefore, represent the first definite record for the true *L. xanthocarpa* from the United States.

9. FRULLANIA CUCULLATA Lindenb. & Gottsche; G. L. & N. Syn. Hep. 782. 1847.

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[1] BRYOLOGIST **15:** 61. 1912.

[2] Mem. Torrey Club **8:** 126. 1902. See also Torreya **7:** 228. 1908.

Collected in March, 1878, at Caloosa, Florida, by C. F. Austin; also, in March, 1905, near Everglade, Florida, by A. A. Eaton. New to the United States. The species was based on material collected at Mirador and Zacuapa, Mexico, by Liebmann, and has lately been reported by Stephani from Boruca, Costa Rica (*A. Tonduz 15523*). The Florida specimens are somewhat smaller than those from Mexico and Costa Rica, which the writer has examined, so that their determination must be regarded as provisional. At the same time the species of the subgenus *Thyopsiella*, to which *F. cucullata* belongs, are so variable that a marked difference in size is often consistent with a single specific type.

Among the close relatives of *F. cucullata*, *F. brasiliensis* Raddi, and *F. intumescens* Lehm. & Lindenb. may be especially mentioned. Both of these species have a wide distribution in tropical America and may perhaps be expected in subtropical Florida. All three species are of a considerable size, all are more or less copiously branched, and all show a marked reddish pigmentation in most of their forms. The leaves are imbricated and strongly convex, tending to be acute or apiculate at the inflexed apex, and the bifid underleaves are more or less revolute along the margins. The leaf-cells are of small size and have distinct trigones; although the latter are triangular in form the sides of the triangle are often wavy and the cell-cavities in this way acquire a sinuous outline. Intermediate thickenings are rare in the middle of the lobes, but tend to be more numerous toward the margins. Coalescence between the thickenings is most strongly pronounced in the lobules and underleaves.

In the presence of perianths there is no trouble in separating *F. brasiliensis* from the other two species. The perianth is characterized by being terete or nearly so at maturity: in both *F. cucullata* and *F. intumescens* it is distinctly tri-plicate, the ventral keel being sharp and distinct. There is much more difficulty in separating *F. cucullata* from *F. intumescens*, and it is possible that they represent forms of a single variable species. There is a tendency, however, for the lobes of the bracts and the divisions of the bracteoles to be more or less toothed in *F. intumescens*, while they are entire or nearly so in *F. cucullata*.

In the various specimens of *F. cucullata* examined by the writer, the stems are at first simply pinnate, but with the appearance of the female inflorescences branches of a higher order appear and often give the fertile shoots a fastigiate appearance. The lobules on the main stem are almost always explanate, and this condition is sometimes found throughout an entire shoot-system. The ultimate branches, however, which are usually of the third or fourth rank, frequently show some or all of their lobules in the form of clavate water-sacs, as in all typical species of *Thyopsiella*, and lobules of this type are sometimes found on branches of the second rank or even on the main stem itself. Apparently the conditions under which a plant is growing has a marked influence upon the type of lobule developed. The specimens from Caloosa, which are preserved in the Underwood collection, belonging to the New York Botanical Garden, show female inflorescences but no perianths. The specimens from near Everglade, received from Miss Haynes, but likewise coming from the herbarium of the New York Botanical Garden, show perianths in abundance. Both specimens are entirely free from male inflorescences.

10. ANTHOCEROS CRISPULUS Douin.

Collected in September, 1913, on a moist bank, at Highlands, Monmouth County, New Jersey, by Miss C. C. Haynes and the writer. The third North American station for the species. The first stations to be recorded were Andover and West Hartford, Connecticut, where the plant was discovered in 1911 by Miss Annie Lorenz[1]. In all probability it will be found to have a wide distribution in North America, as well as in Europe, when the characters separating it from *A. punctatus* L. are better understood.

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A NEW SPECIES OF BLASTENIA

H. E. HASSE

Blastenia (Sect. *Eublastenia*, A. Zahlbr.) **herrei** Hasse, n. sp. Thallus scaly-crustaceous, subdeterminate, pale greenish ash-color; hypothallus pale, indistinct, KHO—; disk crimson to blackening. Apothecia mostly slightly elevated, 0.5 to 1.25 mm. wide; disk flat with a concolorous, thin, slightly prominent, entire or wavy and even sinuate proper margin. Epithecium granulose, dark violet-purple; paraphyses stout, loose, slightly thickened above and with one or two sub-capitate septa, some forked above; thecium pale sordid roseate; hypothecium of same hue, but darker; asci more or less inflated clavate, their apices reaching the sharply defined colored surface of the epithecium, 8-spored. Spores ovoid-ellipsoid to oblong ellipsoid, both ends rounded, polarilocular, connected by a delicate isthmus, this and the polar cells, approximate in a few spores, are at first indicated by minute oil cells that disappear after KHO, exospore thin; spores 14μ to 19μ long, 8μ to 12μ thick (Dr. Herre's measurements are 10μ long, 5μ to 7μ thick). Hym. gel. with iodine stains a handsome blue, with KHO violet-purple. Spermogones not seen.

On bark, Ten Mile Tp., Whatcom Co., Washington. Collected by Dr. A. C. Herre, for whom it is named.

FURTHER OBSERVATIONS ON THE TEXAN OXYMITRA (TESSELLINA)

MARSHALL A. HOWE

In a recent number of THE BRYOLOGIST (**17**: 72–75) the writer announced the discovery in Texas of a Ricciaceous hepatic representing a primarily Mediterranean genus not before recorded for North America. The more or less complicated synonymy of the genus and of its single currently recognized species was there discussed, and the peculiarities of the Texan plant were there considered insufficient to distinguish it specifically from *Oxymitra paleacea*, better known as *Tessellina pyramidata*, the one recognized species of the genus. However, a

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[1] See Evans, Rhodora **14**: 16. 1912.